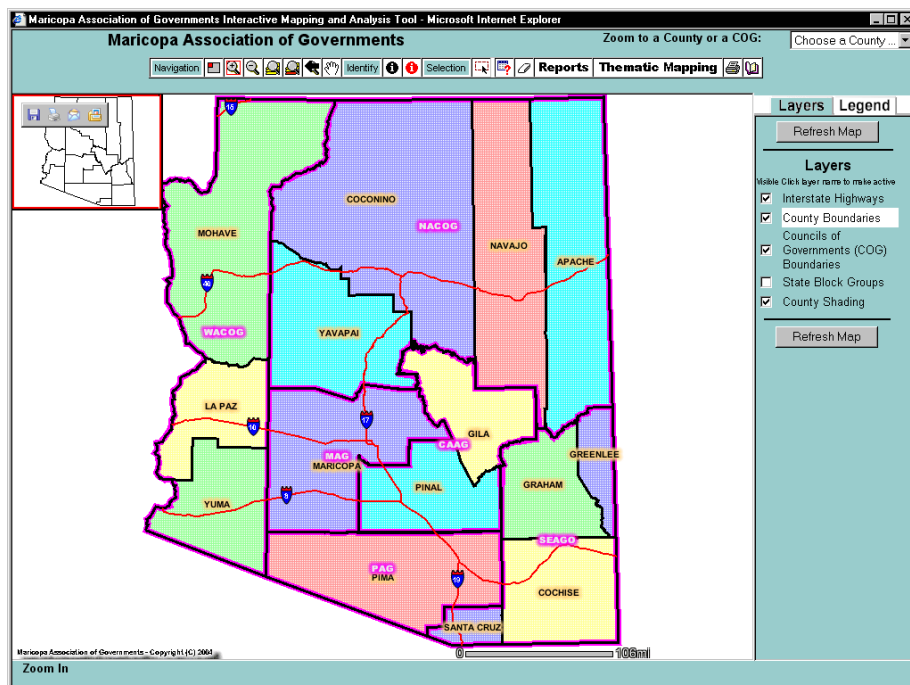


MAG Interactive Mapping and Analysis Tool For Statewide Analysis

User Guide



DRAFT

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302 North 1st Avenue, Suite 300

Phoenix, AZ 85003

602-254-6300

Web Site: www.mag.maricopa.gov

Mapping Tool: ims.mag.maricopa.gov/website/az_census/

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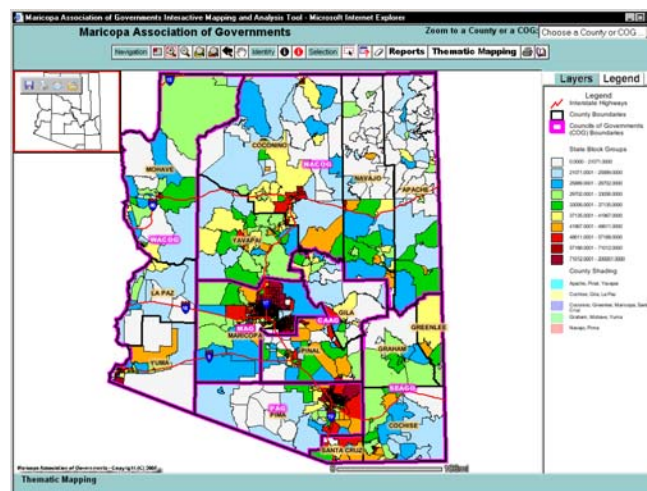
INTRODUCTION

The MAG Interactive Mapping and Analysis Tool is an Internet Map Server (IMS) application that allows users to create maps and perform analysis of displayed data in a graphical format.

In addition to mapping state and Census GIS data layers, users can perform analysis on those layers to create a thematic map. A thematic map displays geographic boundary data based on values contained within a table by ranges. For instance, a user can create a median household income map like the one displayed in the image below based on the boundaries of the 2000 Census Block Groups. This tool also allows more complex analyses such as change in densities to be calculated and displayed. This type of analysis can be currently performed on Census Block Group data.

Statistical Reports that summarize a selected set of records can be created for the Census data.

After an analysis or report is created, it can be printed to create a hard copy version.



WEB PAGE OVERVIEW

The web page displayed below is the starting point to create and analyze data. The web page is composed of three major components that allow the user to interact with the web page.

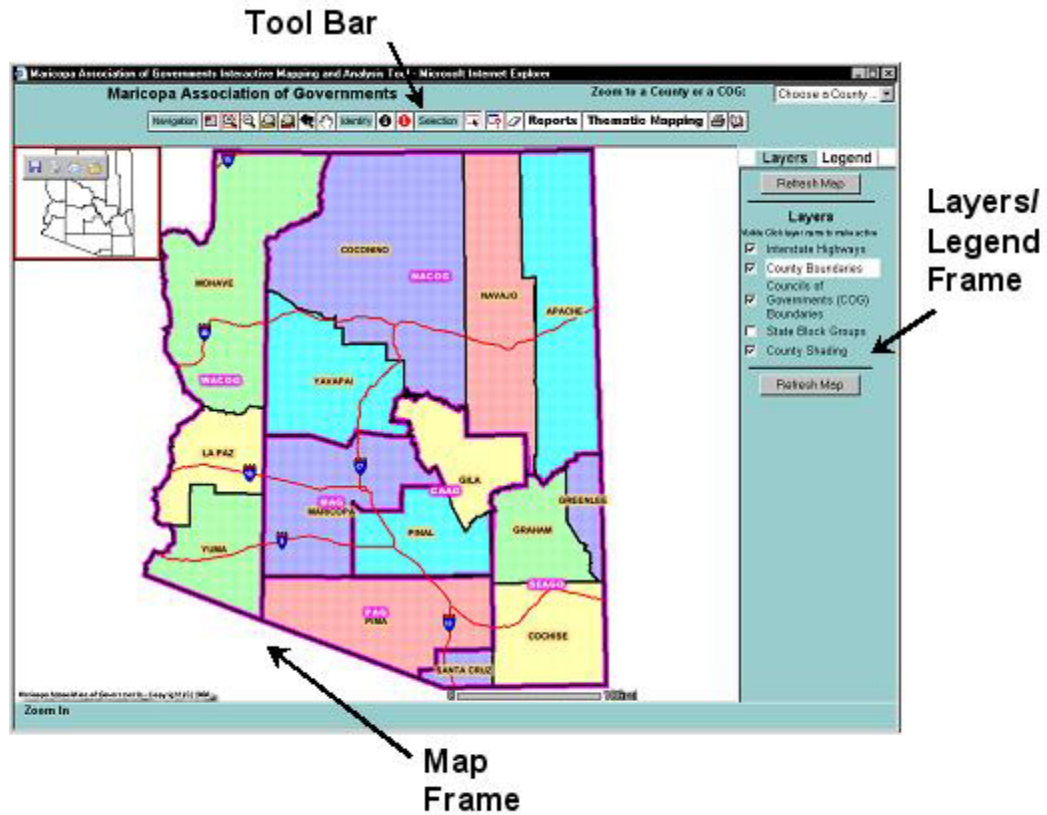


Figure 1 - Web Page Layout

1. Map Frame



This is the location on the web page where map layers (such as Interstate Highways and Council of Governments (COG) boundaries) are displayed and where the graphical output of an analysis is displayed (Figure 2). The map frame contains an overview map in the upper left corner to give the user a reference when zoomed into an area.

Figure 2 - Map Frame with Overview Map

2. Layers/Legend Frame

On the right hand side of the web page is where users can change the map layers that can be seen in the map frame and see the symbols used to represent those layers. This frame has two parts, layer and legend. When first opened, the web page will display the layers frame (Figure 3). To change from the layer to legend click the 'legend' tab with the cursor and the symbols for each layer will be displayed (Figure 4).

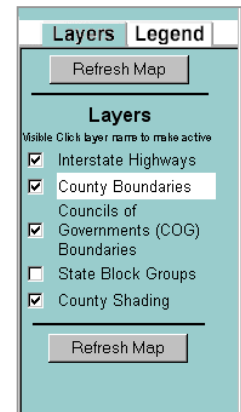


Figure 3- Layer/Legend Frame with Layers



To change the layers that are displayed in the map frame click the 'visible' box in front of the layer name in the layers frame. A check in the visible box in front of the layer means that it is displayed in the map frame. When the web site is opened, Interstate Highways, County Boundaries, Councils of Governments (COG) boundaries, and County Shading are visible. For changes to take effect, the 'Refresh Map' button in the layers frame must be clicked after making changes.

Figure 4- Layer/Legend Frame with Legend

For example, if the user wanted to make the State Block Groups layer visible and turn off the Interstate Highways layer, they would click the box in front of Interstate Highways to remove the check and then check in front of the State Block Groups layer to place a check in front of that layer. To make the changes appear, click the 'Refresh Map' button on the bottom of the layers frame.

When a web page is first opened, the County Boundaries is the active layer. This is symbolized by the white rectangle around the layer name in the layers frame and means that further analysis can occur on that layer. The selection, identify, and thematic mapping tools described later in this document rely on the active layer for their function. Only one layer can be active at a time. To change which layer is active, click on the layer name and the white rectangle will change to that layer. Then click “Refresh Map”.

3. Tool Bar

Displayed at the top of the web page, this contains the tools that allow users to interact with the map (Figure 5). The Tools are organized into the following categories; Map Navigation, Feature Identification, Selection Tools, Reports, Thematic Mapping, Print, and Help with each represented by a unique image.

***Note:** The Toolbar status for most tools will display in the lower left corner of the web page. The tool in use will have a red box around it in the toolbar. The function of each tool can be seen by moving the mouse (pointer) over the tool’s image in the tool bar.*

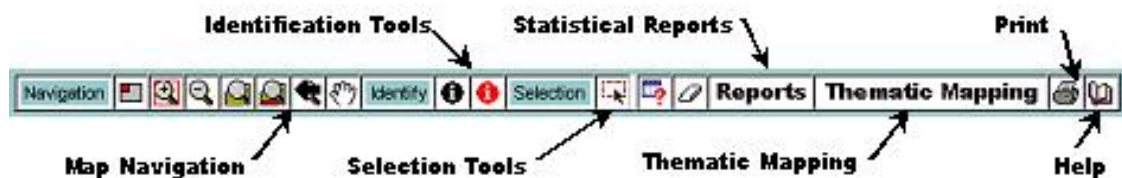





Figure 5 – Tool Bar Layout


Tool Bar Continued...


MAP NAVIGATION

 - **Toggle Overview Map:** Click on this to turn overview map (described in Map Frame Section) on or off.


 - **Zoom in:** To zoom into an area on the Map Frame, click the crosshairs on the area you would like to zoom to. To zoom to a specific area, hold down the left button on the mouse and draw a box. Release the left button to zoom to that area.

 - **Zoom out:** Click the crosshairs on map frame to zoom out incrementally.


 - **Zoom to Full Extent:** Zooms map frame to Arizona map extent.


 - **Zoom to active layer:** Zoom Map Frame to the active layer's extent. In most cases this will zoom to the Arizona extent.

 - **Back to last extent:** Map Frame zooms to previous extent visited.


 - **Pan:** Click and hold the left button on the mouse to move the Map Frame and change the view displayed.

IDENTIFICATION TOOLS


 - **Identify:** Click on a specific location on the Map Frame to display information (attributes) of the active layer (see legend layer discussion above for active layer discussion).

 - **ID Visible Features:** Click on a specific location on the Map Frame to display information (attributes) of all visible layers (see legend layer discussion above for active layer discussion).

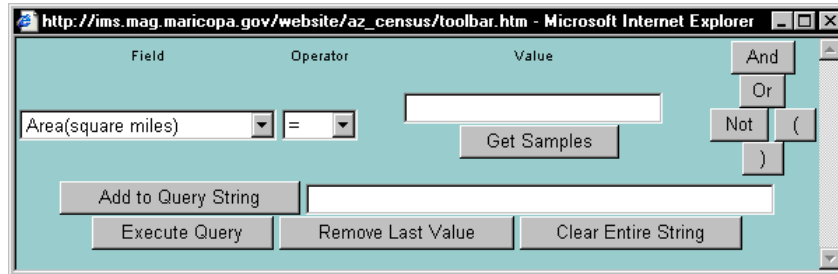
SELECTION TOOLS

 - **Select by Rectangle:** This allows features to be selected from the active layer (see legend layer discussion above for active layer discussion). To select features, click and drag the mouse to draw a box, release mouse button to stop drawing box. This will select features in the active layer in the map frame that are touched by the rectangle. To select single features, click once on the feature in the active layer.

Note: This selection can be used in the reports tool described later.

- **Query:** Allows a user to select features from the active layer based on a value contained within a field. Click the tool button and a dialog box will appear (Figure 6) allowing the user to enter a field name, operator (such as =, <, or >) and a value to search for. Once the previous items are selected, click ‘Add to Query String’ and then click ‘Execute Query’ to search layer.

***Note:** This selection can be used in the reports tool described below.*

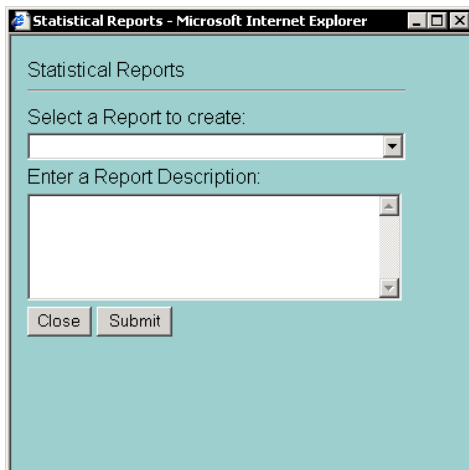


The image shows a web browser window titled 'http://ims.mag.maricopa.gov/website/az_census/toolbar.htm - Microsoft Internet Explorer'. The main content area is a light blue form with three columns: 'Field', 'Operator', and 'Value'. The 'Field' column has a dropdown menu with 'Area(square miles)' selected. The 'Operator' column has a dropdown menu with '=' selected. The 'Value' column has an empty text input field. To the right of these columns are buttons for 'And', 'Or', 'Not', '(', and ')'. Below the columns is a 'Get Samples' button. At the bottom of the form are three buttons: 'Add to Query String', 'Execute Query', and 'Remove Last Value'. There is also a 'Clear Entire String' button to the right of the 'Execute Query' button.

Figure 6 – Query Tool Dialog Box

- **Clear Selection:** Clears any selections created with previously described selections tools.

REPORTS



The image shows a web browser window titled 'Statistical Reports - Microsoft Internet Explorer'. The main content area is a light blue form with the title 'Statistical Reports'. Below the title is a section 'Select a Report to create:' with a dropdown menu. Below that is a section 'Enter a Report Description:' with a large text input field. At the bottom of the form are two buttons: 'Close' and 'Submit'.

Reports - Creates statistical reports from selected set of Census records. To use this tool, the user needs to first select a set of records from the Census data with one of the selection tools previously described. Clicking on the ‘Report’ button launches a dialog box (Figure 7). Examples of the reports available in the ‘Select a Report’ dropdown menu can be found in Appendix A. A description of the report (title) can be entered into the box shown in Figure 7 to be included in the output.

Once the report type and title have been selected, click the ‘Submit’ button to create a report.

Figure 7 – Statistical Reports Dialog Box

THEMATIC MAPPING

Thematic Mapping- Creates a map for Census data based on a value in a layer. For instance, dividing the population field by the square miles field creates a population density map. Clicking on this tool starts the dialog box that asks the user to choose which layer they would like to do an analysis on. The layer needs to be active and visible in order to perform an analysis.

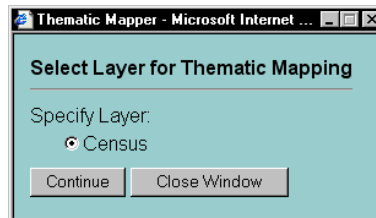


Figure 8 - Thematic Mapping ‘Select Layer’ Box

Next, a second window (Figure 9) appears that requires user inputs to create a thematic map.

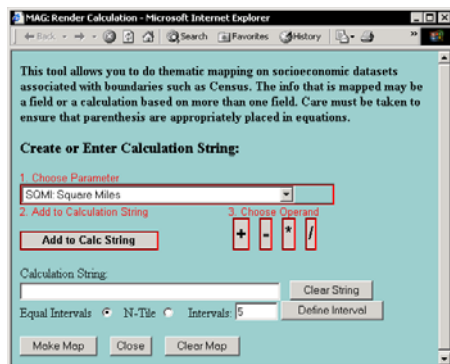
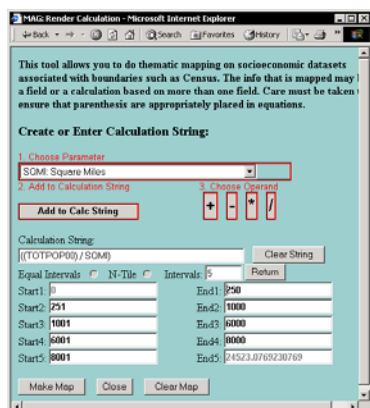


Figure 9 – Render Calculation


Thematic mapping allows the user to create maps based on three types of intervals, Equal, N-Tile, and User Defined. Equal interval by five intervals is the type that is chosen when the Render Calculation Dialog Box is first selected. An equal interval is created by dividing the difference between the maximum and the minimum values in a record set by the number of intervals. For instance, if one is mapping population and the maximum population is 1500 and the minimum population is zero and the intervals are five, this will result in five intervals of 300 people each. The records are distributed into the corresponding ranges. This method may lead to a skewing of data if there are many large or small numbers. To minimize the effects of this skewing, the N-Tile option can be used. This method takes the number of records (in the Census Block Groups this would be 3,570) and divides it by the number of intervals (five) resulting in intervals that provide an equal distribution of records.

The final interval type is User Defined and can be accessed by selecting the ‘Define Interval’ button. This allows the user to create the intervals that will be used.



A series of input boxes (Figure 10) enables users to input the interval range that will be used to map the data. The starting and ending User Defined Intervals are calculated by the Thematic Mapper. The user then enters the values for the remaining intervals.

PRINT

 - **Print** – Creates a print page for display in map frame. A menu appears (Figure 11) that allows the user to choose the map size and also a title to add to the map. Clicking the ‘Create Print Page’ button will open a new browser window (Figure 12), which then can be printed by choosing ‘Print’ from the file menu.

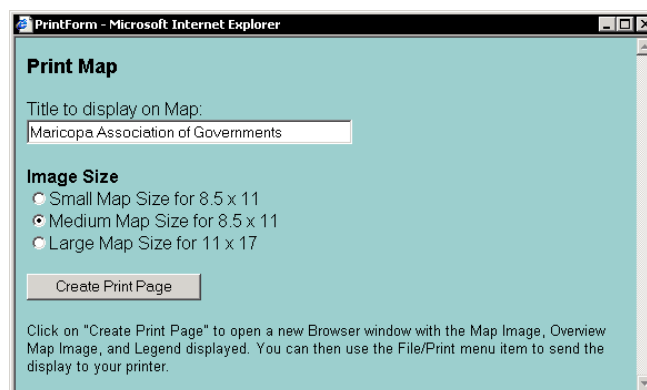


Figure 11 – Print Form

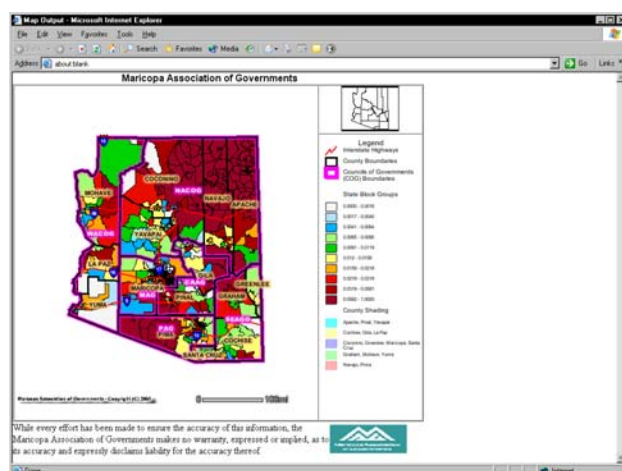


Figure 12 – New Browser Window for Print

HELP

 - **Help** – Provides a link to this document in PDF format, as well as instructions for using the tools included in toolbar.



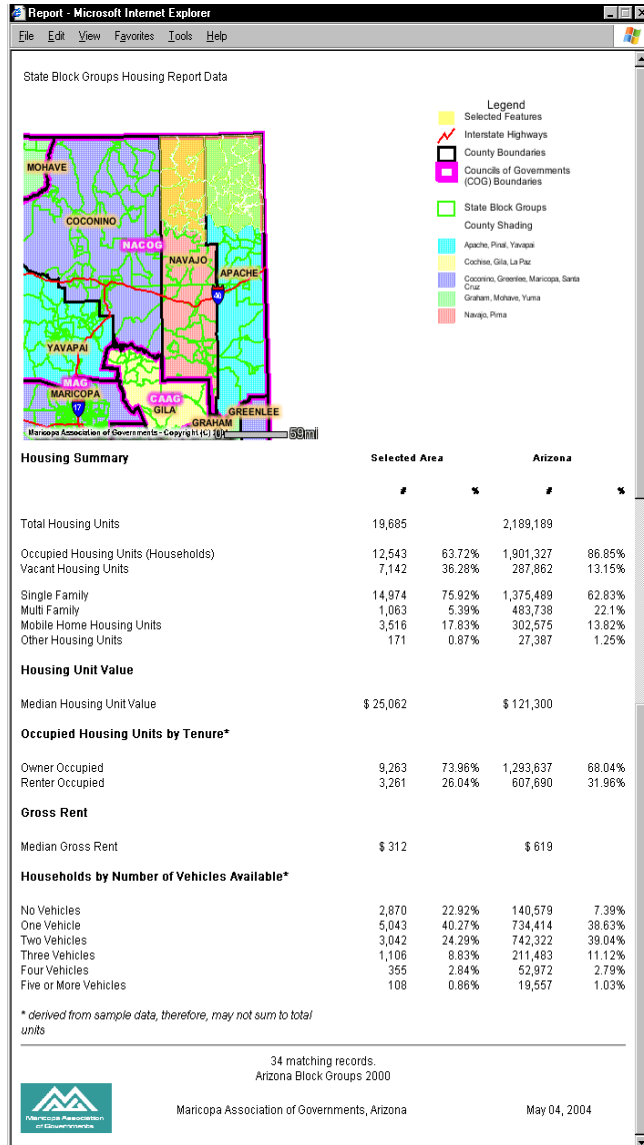
FOR MORE INFORMATION

The MAG Interactive Web Site is at URL ims.mag.maricopa.gov/website/az_census/ and is always changing. New reports may be added depending upon the needs of the users. For comments or questions, please contact Mele Koneya, GIS Decision Support Analyst II, at (602) 254-6300 or via email at mkoneya@mag.maricopa.gov.

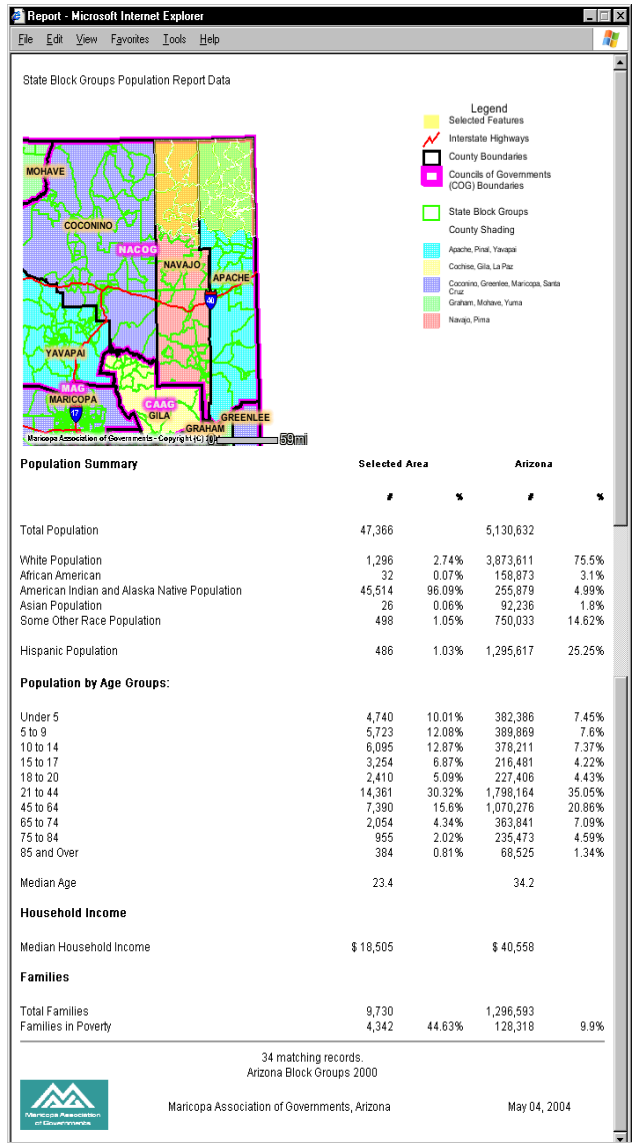
APPENDIX A

Census Block Group Reports

Population Summary Report



Housing Summary Report



APPENDIX B

Maricopa Association of Governments Interactive Mapping and Analysis Tool For Statewide Analysis

Census variables which may be used with the thematic mapper.

Source: U.S. Bureau of the Census (April 1, 2000).

Variable:	Description:
SQMI	Square Miles
TOTALPOP	Total Population
WHITE	White Population
BLACK	African American Population
AMIND	Native American Population
ASIAN	Asian Population
OTHER	Other Population
HISPANIC	Hispanic Population
AGELT5	Population Less Than 5 Years Old
AGE5TO9	Population 5 to 9 Years Old
AGE10TO14	Population 10 to 14 Years Old
AGE15TO17	Population 15 to 17 Years Old
AGE18TO20	Population 18 to 20 Years Old
AGE21TO44	Population 21 to 44 Years Old
AGE45TO64	Population 45 to 64 Years Old
AGE65TO74	Population 65 to 74 Years Old
AGE75TO84	Population 75 to 84 Years Old
AGE85OVER	Population 85 Years and Over
MEDIANAGE	Median Age

Census variables which may be used with the thematic mapper (cont'd.)

Variable:	Description:
HU	Total Housing Units
OCCHU	Occupied Housing Units
VACHU	Vacant Housing Units
OCCRATE	Occupancy Rate
SFHU	Single Family Housing Units
MFHU	Multi-Family Housing Units
MHHU	Mobile Home Housing Units
OTHERHU	Other Housing Units
OWNOCC	Owner Occupied Housing Units
RETOCC	Renter Occupied Housing Units
MEDHUVAL	Median Housing Unit Value
MEDGRRENT	Median Gross Rent
HH0VEH	Households With No Vehicle
HH1VEH	Households with One Vehicle
HH2VEH	Households with Two Vehicles
HH3VEH	Households with Three Vehicles
HH4VEH	Households with Four Vehicles
HH5MVEH	Households with Five or More Vehicles
ILT25K	Household Income Less than \$25,000
I25TO50K	Household Income \$25,000 to \$50,000
I50TO100K	Household Income \$50,000 to \$100,000
I100KMORE	Household Income Greater Than \$100,000
MEDHHINC	Median Household Income
FAMILIES	Families
POVFAMS	Families in Poverty

Census variables which may be used with the thematic mapper (cont'd.)

Variable:	Description:
EMPPOP	Employed Population
MGMTPROF	Management and Professional Occupations
SERVICE	Service Occupations
SALESOFF	Sales and Office Occupations
OTHEROCC	Other Occupations
POP250VER	Total Population 25 Years and Over
LT9GRADE	Less than 9th Grade Education
NODIPL1012	10th to 12th Grade
HSGRAD	High School Graduate
SOMECOLL	Some College
ASSOCBACH	Associate or Bachelor Degree
GRADDEG	Graduate Degree